REMARKS

Claims 1-3 and 7-13 are pending with claims 14-17 canceled.

Claim Rejections Under 35 U.S.C. §103

Claims 1, 2, 7–11, 15 and 16 stand rejected as allegedly being unpatentable over U.S. Patent No. 6,319,634 (Berkey) in view of U.S. Patent No. 5,210,816 (Iino) and/or U.S. Patent No. 6,263,706 (Deliso), and in further view of US Patent No. 6,333,284 (Otsuka). In addition, claims 3, 12 and 13 stand rejected as allegedly being unpatentable over Berkey in view of Iino and/or Deliso, and in further view of Otsuka, and further in view of US Patent No. 6,653,024 (Shiraishi). Applicants respectfully traverse these rejections.

Berkey's method is an OVD (Outside Vapor Deposition) method. Attached is an excerpt from Applied Handbook for Amorphous Silica Materials "Part 3 uses of Silica Glass", Hiroshi Kawazoe, Realize, Inc., page 518 (1999), and translation thereof. It is readily apparent therefrom that a porous silica matrix made by an OVD method is formed around a substrate (i.e., a mandrel) and then the substrate or mandrel is removed. The resulting formed glass matrix is in a tubular shape, i.e., a tube of the glass matrix with the mandrel of some other material in the middle. A review of Figure 8 of Berkey makes clear that an OVD process is used therein wherein element 42 is the mandrel. See also col. 6, lines 4-6, of Berkey disclosing formation of the glass "around support member 42." Thus, it is clear that Berkey teaches forming a glass silica matrix in a tubular shape. See also Figs. 3-6 of Berkey and col. 4, lines 31-52. Therein, it is disclosed that the resulting tubular glass is cut, sliced and opened up by applying a force while heating. Much of Berkey's disclosure, in fact, relates to methods for separating and flattening out the resulting hollow glass tube of their OVD production method. Consequently, the Applicants respectfully submit that there is

sufficient evidence to prove that Berkey's method is an OVD process, as was questioned in the Final Office Action.

Berkey fails to teach or suggest a method for making a "cylindrical" porous silica matrix of "uniform density." And, particularly, Berkey fails to teach or suggest a silica matrix having a density of 0.1 – 1.0 g/cm^3 with its distribution within 0.1 g/cm^3. Berkey's OVD method obviously results in a hollow tube of silica/glass matrix. While a hollow tube has a cylindrical outer shape, it should be evident that it is not a "cylindrical" porous matrix in the sense that term is used in applicants' disclosure, i.e., a solid cylindrical matrix, and is certainly not a cylindrical matrix having a uniform density. A hollow tube or a cylindrical matrix surrounding a mandrel of some other material (e.g., an alumina mandrel used in Berkey) obviously does not have a uniform density, i.e., the density of the air in the hollow part or the alumina mandrel is clearly not uniform with the density of the porous matrix material.

The ability to prepare a material of uniform density – according to the claimed invention and not disclosed by Berkey – is of significant advantage. Applicants have discovered that non-uniformity in density of the glass matrix can create non-uniformity in a deposited material, e.g., fluorine, which in turn can result in an undesired variance in transmittance of the material. See, e.g., the present specification at page 7, lines 22–34. Moreover, Berkey fails to teach or suggest obtaining a constant density matrix to control the concentration of dopants. Rather, Berkey discloses using different types of dopants (e.g., col. 7, lines 31–43) and controlling other parameters while, e.g., doping during formation of the soot matrix (e.g., col. 8, lines 20–34). Because the doping rate of fluorine varies with the matrix density, the concentration of the fluorine atoms doped is partially graded in a matrix

having a density distribution. See, e.g., column 8, lines 4 - 34. Consequently, Berkey fails to lead one of ordinary skill in the art to the claimed invention.

In the Final action it is asserted that Berkey proves a homogenous transmission of -2% to +2% at column 13, line 55, and that one of ordinary skill in the art would conclude that the distribution of fluorine concentration should be constant and cites examples 1 - 4 of Berkey to teach a uniform concentration of fluorine. That Berkey may allege a uniform fluorine distribution (note, however, that examples 2 and 4 of Berkey disclose tubes having a fluorine concentration "slightly less uniform" distribution and Figs. 16 and 19 do not appear to show uniformity) is of no consequence to the reasons discussed above for the failure of Berkey to suggest applicants' claimed method. If Berkey does achieve a uniform density, it is by a different method than the claimed method. Berkey's OVD method never results in a solid cylindrical glass matrix of uniform density.

Moreover, Berkey is not combinable with Iino. Rather, these references teach away from each other. Iino, as discussed above, teaches a higher soot density at the outer circumferential portion of the core as compared to the center portion. In marked contrast, an OVD process as disclosed by Berkey would provide a soot having a lower density at the outer surface than at the center portion. Consequently, these references teach away from each other and neither suggests applicants' invention, i.e., neither suggests a method for preparing a cylindrical silica matrix with a uniform density such that the density distribution is within 0.1 g/cm^3.

With respect to Deliso, Deliso has similar shortcomings as Berkey. First, Deliso discloses that the preferred method of forming the soot preform is the OVD method (see, e.g., col. 7, lines 15–18 and FIG. 1). As such, it would have similar shortcomings as Berkey, namely creating a preform with varying density. Thus, Deliso fails to teach or suggest

making a cylindrical silica matrix with a uniform density such that the density distribution is within 0.1 g/cm^3.

Also, Deliso only insinuates that the amount of fluorine added during doping can be constant across the preform, assuming a constant soot density. See, e.g., col. 4, lines 55–60. However, Deliso does not teach or suggest a soot with constant density, thus, it does not suggest a uniform fluorine doping amount. Rather, Deliso teaches that by picking a dopant from different compounds and controlling dopant parameters, such as doping times, one can control the concentration of dopant in the preform. See, e.g., cols. 4–6. It fails to teach or suggest providing a silica matrix of uniform density to achieve such an objective. Consequently, even if Deliso is combinable with Berkey and/or Iino, their combined teachings fail to teach or suggest a method for making a cylindrical silica matrix having a density of 0.1 – 1.0 g/cm^3 with its distribution within 0.1 g/cm^3.

Otsuka and Shiraishi were applied regarding certain dependent claim recitations. They also provide no teachings regarding preparation of a cylindrical silica matrix of uniform density. Thus, their combination with the above-discussed references also fails to suggest applicants' invention.

For the above reasons, applicants respectfully submit that the rejections of the claims under 35 U.S.C. §103 over Berkey in view of Iino and/or Deliso, and in further view of Otsuka, should be withdrawn.

In view of the above, favorable reconsideration is courteously requested. If there are any remaining issues which can be expedited by a telephone conference, the examiner is courteously invited to telephone counsel at the number indicated below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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